

**Customer No. 33647**  
Confirmation No. 5101

Patent  
Attorney Docket No. ITW7510.094

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of : Schneider, Joseph C.  
Serial No. : 10/711,102  
Filed : August 23, 2004  
For : MULTI-POSITION HEAD PLASMA TORCH  
Group Art No. : 3742  
Examiner : Mark H. Paschall

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**CERTIFICATION UNDER 37 CFR 1.8(a) and 1.10**

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**37 CFR 1.8(a)**

**37 CFR 1.10**

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**APPEAL BRIEF PURSUANT TO 37 C.F.R. §§1.191 AND 1.192**

Dear Sir:

This Appeal Brief is being filed in furtherance of the Notice of Appeal filed on August 20, 2007.

1. **REAL PARTY IN INTEREST:**

The real party in interest is Illinois Tool Works Inc., the Assignee of the above-referenced application by virtue of the Assignment to Illinois Tool Works Inc., recorded on August 25, 2004, recorded at reel 015040, frame 0199.

2. **RELATED APPEALS AND INTERFERENCES:**

Appellant is unaware of any other appeals or interferences related to this Appeal. The undersigned is Appellant's legal representative in this Appeal. Illinois Tool Works Inc., the Assignee of the above-referenced Application, as evidenced by the documents mentioned above, will be directly affected by the Board's decision in the pending appeal.

3. **STATUS OF THE CLAIMS:**

Claims 1-22 and 24 are currently pending, and claims 1-22 and 24 are currently under final rejection and, thus, are the subject of this appeal. Claim 23 has been cancelled.

4. **STATUS OF AMENDMENTS:**

All previous amendments have been entered. Appellant has submitted no additional amendments subsequent to the Office Action of May 18, 2007.

5. **SUMMARY OF THE CLAIMED SUBJECT MATTER:**

Claim 1 calls for a plasma cutting torch (16) including a torch body (31) having a handle which extends from a first end to a second end, with the first end being fixed with respect to the second end. *Specification*, ¶24. The plasma cutting torch (16) also includes a torch head (33) having a restricted pivotable connection (82) to the torch body (31). *Specification*, ¶24. The torch head (33) is configured to generate a cutting arc at a plurality of angles relative to the torch body (31). *Specification*, ¶¶28-31.

Another aspect of the claimed invention is disclosed in claim 10, which calls for a plasma cutting assembly (10) that includes a power source (12) and a plasma torch (16) electrically connectable to the power source (12). *Specification*, ¶21. A multi-position head (33) is ratchetably connected (88) to the plasma torch (16). *Specification*, ¶¶28-31.

A further aspect of the claimed invention, called for in claim 17, includes a plasma torch (16) that includes a handle portion (31) and a work tip portion (32). *Specification*, ¶29. The plasma torch (16) also includes means for providing restricted adjustment of a position of the work tip portion (32) relative to the handle portion (31) when the work tip portion (32) is connected to the handle portion (31), which limits rotation of the work tip portion (32) relative to the handle portion (31) along two axes. *Specification*, ¶¶28-31. The means for providing restricted adjustment of a position of the work tip portion (32) includes a pin (82) pivotably

connecting a head portion (33) of the plasma torch (16) to the torch body (31). *Specification*, ¶28. The rotation of the head portion (33) relative to the torch body (31) is controlled by an indexing mechanism (88) having a ball (92) and a spring (94) generally disposed between the head portion (33) and the torch body (31), with the ball (92) being biased by the spring (94) to engage one of a plurality of recesses (96) in the head portion (33). *Specification*, ¶31.

6. **GROUND OF REJECTION:**

In the Office Action of March 18, 2007, the Examiner rejected claims 1-22 and 24 under 35 U.S.C. § 103(a) as being unpatentable over Sorkin et al. (USP 6,380,508) in view of New et al. (USP 5,916,465) and Stuart et al. (USP 5,338,917). The Examiner also rejected claims 1-22 and 24 under 35 U.S.C. § 103(a) as being unpatentable over Sorkin et al. in view of Stuart et al.

7. **ARGUMENT:**

Initially, Appellant would point out that the outstanding rejections, as presently set forth by the Examiner, are defective. That is, in the Office Action dated May 18, 2007, the Examiner rejected claims 1-22 and 24 under § 103(a) as being unpatentable over Sorkin et al. in view of New et al. and Stuart et al. The Examiner also rejected the very same claims (1-22 and 24) under § 103(a) as being unpatentable over Sorkin et al. in view of Stuart et al. The two rejections, on their face, are contradictory. Either the Examiner believes that the combination of Sorkin et al. and Stuart et al. teaches all of the elements of claims 1-22 and 24, or the Examiner does not believe that the combination of Sorkin et al. and Stuart et al. teaches all of the elements of claims 1-22 and 24, and hence must also rely on New et al. for teaching those elements not disclosed in the other cited references. It appears that the Examiner, in preparing the most recent Office Action, dated May 18, 2007, has simply copied prior office actions, errors and all, and has not prepared a well reasoned rejection of the current claims.

Regardless of this, Appellant believes that (in both of the alternative instances) a *prima facie* case of obviousness has not been established and one cannot be made based on the art of record. To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. *MPEP* §2143. Second, there must be a reasonable expectation of success and both the reasonable expectation of success and the teaching or suggestion to make the claimed combination must be found in the prior art, not in applicant's disclosure. *Id.*, citing *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. *MPEP* §2143.

Appellant believes that a *prima facie* case of obviousness cannot be made based on the art of record because, as will be shown below, (A) the references are directed to very different purposes and there is no motivation to combine these references in a way done so by the Examiner, other than Appellant's own teaching; (B) the combination lacks a reasonable expectation of success; and (C) all the elements of the present claims are not present in the references. The Examiner has not established the three basic criteria required under MPEP §2143, as is set forth in detail below.

**Rejection under 35 U.S.C. §103(a) over Sorkin et al. (USP 6,380,508) in view of New et al. (USP 5,916,465) and Stuart et al. (USP 5,338,917)**

**Claim 1**

The Examiner rejected claim 1 under 35 U.S.C. §103(a) as being unpatentable over Sorkin et al. in view of New et al. and Stuart et al., stating that "the patent to New et al was applied for teaching a pivotable torch head in a TIG, plasma, torch and used to modify the Sorkin et al system to use a pivotable joint." *Office Action*, May 18, 2007, p. 3. The Examiner further stated that "the patent to Stuart et al was applied for teaching that it is conventional in a MIG (also plasma) torch to have a handle 64, one piece integral handle, attached to a torch head, via a pivotable coupling means 70, [to] increase the range of movements of the torch" and that "[o]ne of ordinary skill in arc torches would have found proper motivation in Stuart et al, to use an integral or fixed portion handle, in the Sorkin et al system with enhanced realm of use for the operator." *Id.* at 2. Appellant respectfully disagrees.

**A. Different Purposes and Lack of Motivation**

Based on that which is disclosed in the cited references, Appellant believes that one skilled in the art would not be motivated to combine Sorkin et al., New et al., and Stuart et al. as done so by the Examiner.

Appellant believes that one skilled in the art would not be motivated to combine Sorkin et al., New et al., and Stuart et al., as the combination of the Stuart et al. reference with either of Sorkin et al. or New et al. would result in a configuration that is far different than that which is called for in the current claims. That is, the welding gun disclosed in Stuart et al. is for use in a MIG welding system, not a plasma cutting system as is called for in the current claims, and could not logically be combined with Sorkin et al. or New et al so as to teach the current invention. By comparing the welding gun shown in Fig. 3 of Stuart et al. to the plasma torch of Fig. 2 in the current invention, it is clear that the welding gun taught in Stuart et al. is wholly unsuitable for use in a plasma cutting operation. Thus, it is illogical to conclude, as the Examiner has done here,

that one of ordinary skill in the art would find it obvious to combine a MIG welding gun that is used for joining articles (i.e., welding), as disclosed in Stuart et al., with the disclosure of Sorkin et al. and/or New et al. to teach the multi-position head plasma torch of the current invention, used for cutting or separating articles. A brief review of the Background sections in Stuart et al. and the current Application clearly points out the many differences between MIG welding and plasma cutting, and such is evidence of why one skilled in the art would not be motivated to adapt the elements of a MIG welding gun for use with a plasma torch. *See Stuart et al.*, col. 1, lns. 10-20; *see also Application*, ¶3.

In the current invention, a torch head is shown in detail in Fig. 2. In plasma cutting, an air flow is commonly used to help start the arc and provide plasma gas to the torch. Positioned within a head portion of the plasma torch, is a movable or fixed electrode or consumable that serves as a cathode, and also a fixed or moveable nozzle or tip that serves as an anode. The air flow through the torch head is used to force a separation of the electrode and tip to create an arc. Comparing the structural requirements of a torch head configured for plasma cutting to the torch head disclosed and shown in Fig. 3 of Stuart et al. used for welding makes it clear that it is illogical to suggest that the pivotable conductor tube assembly 71 disclosed therein would be adaptable for use in a plasma cutting operation. *See Stuart et al.*, col. 6, lns. 7-10. The Examiner has stretched what is disclosed in the prior art to encompass that which is set forth in the current invention. Therefore, for at least this reason, Appellant respectfully believes that there is no suggestion or motivation to combine the cited references in the manner done so by the Examiner.

Additionally, the combination of either New et al. or Stuart et al. with Sorkin et al. would merely result in a torch containing two separate mechanisms for pivoting and rotating a torch head. That is, Sorkin is directed to a plasma torch 20 configured to sever a tendon used in post-tension construction and includes a handle 22, a head 24, and a pivot 28. The pivot 28 is a nipple that extends from torch 20 and is received in a pivot point 15 formed in a pocket 12 of a wall 13 adjacent to the tendon to be severed. During use, the pivot 28 and pivot point 15 generally cooperate to allow an operator, upon rotation of the torch handle, with the torch head secured thereto, to sever the tendon. *Sorkin et al.*, col. 7, lns. 3-17. That is, the torch, as a whole, pivots relative to pocket 12 via the pivot point 15, without any rotation between the handle 22 and the head 24. Conversely, both New et al. and Stuart et al. teach a torch having a head portion pivotably connected to a handle portion, as both references disclose a torch having a pivotal head assembly wherein a ball-and-socket type connection is used. *See New et al.*, Fig. 1 and *Stuart et al.*, Figs. 5-8. Therefore, the addition of the ball-and-socket type connection taught in New et al.

and/or Stuart et al. to the plasma torch 20 of Sorkin et al. would result in a torch that can rotate via the mating of pivot 28 and pivot point 15 and additionally rotate via a pivotable, ball-and-socket type connection positioned between the handle 22 and the head 24. Such a configuration is duplicative and unnecessary, and as such there would be motivation to combine either New et al. or Stuart et al. with Sorkin et al.

Furthermore, with respect to the combination of the New et al. reference with the Stuart et al. reference, additional problems with the combination arise. That is, were the New et al. reference to be modified with an integral handle as disclosed in Stuart, the torch head in New et al. would no longer be pivotable, rendering the teachings of New et al. ineffective. New et al. discloses a TIG torch 10 having a pivotal head assembly 70 connected to a body 12 by way of a swivel member 74 that is part of a ball-and-socket type connection. *New et al.*, col. 3, lns. 8-43. As shown in Fig. 4, New et al. discloses manual rotation of front and rear handle portions 52, 54 of the body 12 respectively, relative to one another to cause the body 12 to move axially forward or backward in a swivel housing 30. *New et al.*, col. 3, ln. 45 to col. 4, ln. 4. This allows a forward end of the body 12 to compress or release a spring mechanism 104 into/out of substantial pressure engagement with a swivel seat 102 to lock and release the swivel member 74 in position due to friction between the swivel end and the socket and seat. *Id.* That is, New et al. requires rotation between a first end 52 of the handle portion and a second end 54 of the handle portion to allow loosening and tightening of the ball-and-socket type connection and to allow for rotation of the torch head. Conversely, Stuart et al. teaches an integral handle 64 attached to a torch head via a pivotable coupling means 70. *See Stuart et al.*, Fig. 3. Applying an integral handle, as taught in Stuart et al., to the structure of New et al. would prevent rotation between the first and second portions 52, 54 of the handle in New et al. and thus would not allow for pivoting of the torch head to occur. As such, combining these two references would render the benefits set forth in New et al. ineffectual. Were the opposite approach to be taken, and the pivotable handle portions of New et al. applied to the handle of Stuart et al., there still would be no reason to apply the teachings of New et al. to modify Stuart et al. Such a combination would only result in a welding torch containing two separate mechanisms for pivoting and rotating a torch head (i.e., pivoting between handle portions and pivoting between the handle and torch head). Such a duplicative configuration seems wholly unnecessary. Thus, it cannot be concluded that one skilled in the art would combine the two references in either manner, especially in a way that renders the present claims obvious.

While Appellant is mindful of the decision in *KSR Int'l Co. v. Teleflex Inc.*, 82 USPQ2d 1385 (2007), Appellant believes that the Examiner has still not met the burden for showing a teaching, suggestion, or motivation to combine the cited references. That is, while the holding in *KSR* supports an expansive and flexible approach for showing the requisite teaching, suggestion, or motivation in determining obviousness, the analysis supporting a rejection under 35 U.S.C. 103 should be made explicit, and rejections on obviousness cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. *See KSR*, supra at 1396; *see also Federal Register*, Vol. 72, No. 195, October 10, 2007, p. 57528-57529.

In the present case, the Examiner's rationale for combining the cited references consists of a mere statement that "[o]ne of ordinary skill in arc torches would have found proper motivation in Stuart et al, to use an integral or fixed portion handle, in the Sorkin et al system with enhanced realm of use for the operator." *Office Action*, supra at 2. Such a general statement of providing "enhanced realm of use for an operator" hardly qualifies as an explicit analysis in support of a finding of obviousness and clearly lacks a "rational underpinning to support the legal conclusion of obviousness." As set forth in *KSR*, a proper rationale for supporting a conclusion that the claim would have been obvious should show that all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded nothing more than predictable results to one of ordinary skill in the art at the time of the invention. *See KSR*, supra at 1395. As set forth in detail above, such rationale is simply not provided by the Examiner in combining the cited references. The combination of Stuart et al. with Sorkin et al. and New et al. requires a "change in the respective function" of the apparatuses disclosed therein, as (1) the torch of Stuart et al. is a MIG welding gun having a markedly different structure than the plasma and TIG torches of Sorkin et al. and New et al., respectively, (2) the modification of the pivot mechanism is Sorkin et al. with the ball-and-socket type connection of New et al. or Stuart et al. would result in two separate and duplicative mechanisms for pivoting and rotating a torch head, and (3) applying an integral handle, as taught in Stuart et al., to the structure of New et al. would negate the rotational feature in New et al. and not allow for pivoting of the torch head to occur, or conversely, would result in a welding torch containing two separate and duplicative mechanisms for pivoting and rotating a torch head. As set forth in *KSR*, if the Examiner cannot show that "all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no

change in their respective functions... then this rationale cannot be used to support a conclusion that the claim would have been obvious to one of ordinary skill in the art.” See *KSR*, supra at 1396; see also *Federal Register*, supra at 57529. (emphasis added) In light of the arguments set forth above by Appellant, it is clear that the Examiner has failed to set forth a sufficient rationale for combining the cited references to support a finding of obviousness. As such, Appellant believes that the rejection of claim 1 under 103(a) is in error and respectfully requests withdrawal thereof.

B. Combination is Unworkable

While Appellant believes that there is no suggestion or motivation to combine the cited references, even were there motivation to combine Sorkin et al., New et al., and Stuart et al., the combination of the references would not have a likelihood of success, at least not of the claimed invention. The combination of Sorkin et al., New et al., and Stuart et al. would result in a configuration that is far different than that which is called for in the current claims.

First, the combination of either New et al. or Stuart et al. with Sorkin et al. would result in a torch containing two separate mechanisms for pivoting and rotating a torch head, which is clearly different from the present invention. That is, the plasma torch 20 of Sorkin et al. rotates via a pivot 28 that extends from torch 20 and is received in a pivot point 15 formed in a pocket 12 of a wall 13 adjacent to the tendon to be severed. During use, the pivot 28 and pivot point 15 generally cooperate to allow an operator, upon rotation of the torch handle, with the torch head secured thereto, to sever the tendon. *Sorkin et al.*, col. 7, lns. 3-17. The addition of the pivotal head assembly comprising a ball-and-socket type connection that is set forth in New et al. and Stuart et al. to the plasma torch 20 of Sorkin et al. would result in a torch that can rotate via the mating of pivot 28 and pivot point 15 and additionally rotate via the pivotable, ball-and-socket type connection positioned between the torch handle and the torch head.

Additionally, the combination of the New et al. reference with the Stuart et al. reference, results in a torch configuration that is either ineffectual or duplicative. That is, New et al. discloses a TIG torch 10 having a pivotal head assembly 70 connected to a body 12 by way of a swivel member 74 that is part of a ball-and-socket type connection, with the pivoting of head assembly 70 being made possible by manual rotation of front and rear handle portions 52, 54 of the body 12 relative to one another. *New et al.*, col. 3, ln. 45 to col. 4, ln. 4. That is, New et al. requires rotation between a first end 52 of the handle portion and a second end 54 of the handle portion to allow loosening and tightening of the ball-and-socket type connection and to allow for rotation of the torch head. Conversely, Stuart et al. teaches an integral handle 64 attached to a



torch head via a pivotable coupling means 70. See *Stuart et al.*, Fig. 3. Applying an integral handle, as taught in *Stuart et al.*, to the structure of *New et al.* would prevent rotation between the first and second portions 52, 54 of the handle in *New et al.* and thus would not allow for pivoting of the torch head to occur. Were the opposite approach to be taken, and the pivotable handle portions of *New et al.* applied to the handle of *Stuart et al.*, there still would be no reason to apply the teachings of *New et al.* to modify *Stuart et al.* Such a combination would only result in a welding torch containing two separate mechanisms for pivoting and rotating a torch head (i.e., pivoting between handle portions and pivoting between the handle and torch head).

In light of the above, Appellant believes that there is no reasonable expectation of success of deriving the present invention based on the combination of *Sorkin et al.*, *New et al.*, and *Stuart et al.*

#### C. Combination of References Lacks All Elements

In addition to there being no suggestion or motivation to combine *Sorkin et al.*, *New et al.*, and *Stuart et al.*, and that the combination thereof lacks likelihood of success, the combination of the cited references also fails to teach or suggest all of the elements of claim 1. Claim 1 calls for, in part, a plasma cutting torch having a body with a first end fixed with respect to a second end, and a torch head having a restricted pivotable connection to the body for generating a cutting arc at a plurality of angles. The cited references fail to disclose a plasma torch having a body with a first end fixed with respect to a second end and a pivotable torch head connected to the torch body.

*Sorkin* is directed to a plasma torch configured to sever a tendon used in post-tension construction. As shown in the figures of *Sorkin*, a cutting torch 20 includes a handle 22, a head 24, and a pivot 28. The pivot 28 is received in a pivot point 15 formed in a pocket 12 surrounded by a workpiece 10. During use, the pivot 28 and pivot point 15 generally cooperate to allow an operator, upon rotation of the torch handle, with the torch head secured thereto, to sever the tendon. *Sorkin et al.*, col. 7, lns. 3-17. That is, the torch, as a whole, pivots relative to pocket 12 via the pivot point 15. However, there is no rotation of handle 22 with the head 24 when the handle and head are connected. *Sorkin* neither teaches nor suggests that head 24 includes a pivotable connection to handle 22. Pivot 28 is simply a nipple that extends from torch 20 to engage a workpiece to facilitate alignment of the torch therewith.

*New et al.* discloses a TIG torch 10 having a pivotal head assembly 70 connected to a body 12 by way of a swivel member 74 that is part of a ball-and-socket type connection 38, 78. *New et al.*, col. 2, ln. 39 to col. 3, ln. 44. As set forth above, *New et al.* discloses manual rotation

of front and rear handle portions 52, 54 of the body 12 respectively, relative to one another to allow loosening and tightening of the ball-and-socket type connection 38, 78 and to allow for rotation of the torch head assembly 70. Thus, New et al. clearly does not teach or suggest a plasma torch having a body with a first end fixed with respect to a second end.

While Stuart et al. does disclose the use of an integral handle, this integral handle is part of a MIG welding gun, not a plasma torch. As set forth in detail above, a MIG welding torch is markedly different from a plasma torch. Thus, Stuart et al. fails to specifically disclose a plasma torch having a handle with a first end fixed with respect to a second end.

Furthermore, while New et al. and Stuart et al. may teach a pivotable connection between a torch head and a torch body, neither reference teaches or suggests a restricted pivotable connection between the torch head and the torch body as called for in claim 1. That is, while New et al. and Stuart et al. do teach pivotal torch assemblies, both references disclose a torch having a pivotal head assembly wherein a ball-and-socket type connection is used. When the ball and socket connection is loosened, the pivotable member is allowed to move freely and unrestricted in any direction and to any degree. *See New et al.*, col. 2, ln. 39 to Col. 3, ln. 44; see also . *Stuart et al.*, col. 6, ln 5 to col. 7, ln. 55. Neither reference teaches or suggests that the ball and socket connections therein are restricted in any manner as called for in claim 1.

Therefore, none of the cited references specifically discloses a plasma torch having a body with a first end fixed with respect to a second end and a torch head having a restricted pivotable connection to the torch body.

For all the reasons set forth above, Appellant believes claim 1, and the claims that depend therefrom, are patentably distinct over the art of record.

#### **Claim 10**

The Examiner rejected claim 10 under 35 U.S.C. §103(a) as being unpatentable over Sorkin et al. in view of New et al. and Stuart et al., under the same rationale as that set forth above for claim 1. As set forth above, Appellant believes that there is no motivation for combining Sorkin et al., New et al., and Stuart et al. as done so by the Examiner. Additionally, the combination of the references would not have a likelihood of success, at least not of the claimed invention.

##### **A. Different Purposes and Lack of Motivation**

As set forth in detail above with respect to claim 1, comparing the structural requirements of a torch head configured for plasma cutting to the torch head disclosed and shown in Fig. 3 of Stuart et al. used for welding makes it clear that it is illogical to suggest that the pivotable

conductor tube assembly 71 disclosed therein would be adaptable for use in a plasma cutting operation. *See Stuart et al.*, col. 6, lns. 7-10.

Additionally, the combination of either New et al. or Stuart et al. with Sorkin et al. would result in a torch containing two separate mechanisms for pivoting and rotating a torch head, which is clearly different from the present invention. That is, the addition of either New et al. or Stuart et al. to the plasma torch 20 of Sorkin et al. would result in a torch that can rotate via the mating of pivot 28 and pivot point 15 and additionally rotate via a pivotable, ball-and-socket type connection (as taught in New et al. and Stuart et al.) positioned between the handle 22 and the head 24. Such a configuration is duplicative and unnecessary, and as such, there would be no motivation to combine either New et al. or Stuart et al. with Sorkin et al.

Furthermore, with respect to the combination of the New et al. reference with the Stuart et al. reference, applying an integral handle, as taught in Stuart et al., to the structure of New et al. would prevent rotation between the first and second portions of the handle in New et al. and thus would not allow for pivoting of the torch head to occur. As such, combining of the two references would render the benefits set forth in New et al. ineffectual. Were the opposite approach to be taken, and the pivotable handle portions of New et al. applied to the handle of Stuart et al., there still would be no motivation to apply the teachings of New et al. to modify Stuart et al. Such a combination would only result in a welding torch containing two separate mechanisms for pivoting and rotating a torch head (i.e., pivoting between handle portions and pivoting between the handle and torch head).

Thus, it cannot be concluded that one skilled in the art would combine the cited references, especially in a way that renders the present claims obvious.

**B. Combination is Unworkable**

Even assuming *arguendo* that there is a suggestion or motivation to combine the cited references, the combination of Sorkin et al., New et al., and Stuart et al., would not have a likelihood of success, at least not of the claimed invention. As set forth in detail above, the combination of the references results in either multiple and duplicative mechanisms for rotation or results in rendering mechanisms for rotation ineffectual.

The combination of either New et al. or Stuart et al. with Sorkin et al. would result in a torch containing two separate mechanisms for pivoting and rotating a torch head, as rotation between the torch handle and the torch head provided by the ball-and-socket type connection of New et al. and Stuart et al. would be added to the torch rotation provided via the pivot 28 and pivot point 15 in Sorkin et al. Additionally, the combination of the New et al. reference with the

Stuart et al. reference, results in a torch configuration that is either ineffectual or duplicative. Applying an integral handle, as taught in Stuart et al., to the structure of New et al. would prevent rotation between the first and second portions 52, 54 of the handle in New et al. and thus would not allow for pivoting of the torch head to occur. Conversely, were the opposite approach to be taken, and the pivotable handle portions of New et al. applied to the handle of Stuart et al., there still would be no reason to apply the teachings of New et al. to modify Stuart et al., as such a combination would result in a torch containing two separate mechanisms for pivoting and rotating a torch head.

In light of the above, Appellant believes that the combination of the references would not have a likelihood of success, at least not of the claimed invention.

C. Combination of References Lacks All Elements

In addition to there being a lack of motivation for combining Sorkin et al., New et al., and Stuart et al. as done so by the Examiner, and there being no likelihood of success of achieving the present invention, the cited references also fail to teach or suggest all the elements of claim 10. Claim 10 calls for, in part, a plasma cutting assembly having a plasma torch and a multi-position head ratchetably connected to the plasma torch. Appellant does not necessarily disagree that New et al. and Stuart et al. teach a torch having a head portion pivotably connected to a handle portion; however, that is not what is called for in claim 10. That is, both references disclose a torch having a pivotal head assembly wherein a ball-and-socket type connection is used, but neither has a ratchetable connection as called for in claim 10.

New et al. discloses a TIG torch 10 having a pivotal head assembly 70 connected to a body 12 by way of a swivel member 74 that is part of a ball-and-socket type connection 38, 78. *New et al.*, col. 2, ln. 39 to col. 3, ln. 44. Front 52 and rear 54 handle sections of body 12 are rotated relative to one another to loosen the ball and socket connection 38, 74, allowing the swivel member 74 to move freely within the socket 38. *Id.* That is, once the handle sections 52, 54 have been rotated to relieve the pressure between the swivel end 78 and the swivel seat 38, the swivel is free to move unrestricted in any direction and to any degree. New et al., however, does not teach or suggest a ratchetable connection as called for in claim 10, as the ball-and-socket type connection is clearly not such a ratchetable connection.

Similarly, Stuart et al. discloses a MIG welding gun 1 having a rotatable conductor tube 72 connected thereto. The rotatable conductor tube 72 includes a nozzle 78 thereon that receives a welding wire 24 for performing a welding operation. *Stuart et al.*, col. 6, lns. 5-14. Conductor tube 72 is adjustably attached by a ball and socket joint 100 to the welding gun 1. *Stuart et al.*,

col. 7, lns. 50-52. A wave washer assembly, generally identified by the numeral 102, applies pressure to the ball and socket joint 100, thus holding the conductor tube in a fixed but readily adjustable position. *Stuart et al.*, col. 7, lns. 52-55. The wave washer assembly 102 is a means for applying pressure to a ball shaped protrusion 204 and a connector block 104 to allow the conductor tube 72 to rotate 360 degrees about the centerline of a handle 64 and to articulate approximately 15 degrees or more in a conical area extending from a front end 192 of the connector block 104. *Stuart et al.*, col. 9, lns. 11-22. Similar to New et al., the ball and socket joint 100 connecting conductor tube to MIG welding gun 1 is not a ratchetable connection as called for in claim 10. Thus, *Stuart et al.* also fails to teach or suggest a ratchetable connection as called for in claim 10 of the present invention.

The addition of Sorkin et al. to New et al. and/or *Stuart et al.* does not to overcome the deficiencies of the other cited references in regards to teaching a ratchetable connection. Sorkin et al. in no way teaches the claimed plasma torch with a pivoting head, as the head of the torch of Sorkin must pivot with the handle thereof. *See Sorkin et al.*, col. 7, lns. 3-17. As such, Appellant believes claim 10, and the claims that depend therefrom, are patentably distinct over the art of record.

#### **Claim 17**

The Examiner rejected claim 17 under 35 U.S.C. §103(a) as being unpatentable over Sorkin et al. in view of New et al. and *Stuart et al.*, under the same rationale as that set forth above for claims 1 and 10. Again, and similar to the arguments set forth regarding claims 1 and 10, Appellant believes that there is no motivation for combining Sorkin et al., New et al., and *Stuart et al.* as done so by the Examiner to reject claim 17, and that additionally, the combination of the references would not have a likelihood of success, at least not of the claimed invention.

##### **A. Different Purposes and Lack of Motivation**

As set forth in detail above, Appellant believes that (for multiple reasons) there is no suggestion or motivation to combine the cited references in the manner done so by the Examiner. First, the combination set forth by the Examiner attempts to combine technologies and mechanisms that could not logically be combined, as the structure of the MIG torch disclosed in *Stuart et al.* could not be combined with a plasma cutting system as is called for in the current claims, and could not logically be combined with Sorkin et al. or New et al so as to teach the current invention. Furthermore, the combination set forth by the Examiner results, on multiple levels, in torch configurations that include duplicative mechanisms for rotation or in a torch construction in which the mechanisms for rotation are rendered ineffectual. That is, as described

above, the combination of either New et al. or Stuart et al. with the torch of Sorkin et al. would result in a torch with duplicative mechanisms for rotation. The further combination of New et al. with Stuart et al. would result in a torch in which the mechanism for rotation is rendered ineffectual or in one with duplicative mechanisms for rotation. Thus, in multiple respects, the combination of the three cited references is duplicative and/or renders the modified reference unsuitable for its intended purpose. As such, there would be motivation to combine the teachings of Sorkin et al., New et al. and Stuart et al.

**B. Combination is Unworkable**

Not only is there is no suggestion or motivation to combine the cited references in the manner done so by the Examiner, but the combination thereof would also fail to result in a likelihood of success in achieving the claimed invention. As set forth in detail above, the combination set forth by the Examiner attempts to combine technologies and mechanisms that could not logically be combined, as MIG and plasma torch structures are much different. Furthermore, the combination set forth by the Examiner results, on multiple levels, in torch configurations that include duplicative mechanisms for rotation or in a torch construction in which the mechanisms for rotation are rendered ineffectual. For all these reasons, the combination of Sorkin et al., New et al. and Stuart et al., would not result in the present invention.

**C. Combination of References Lacks All Elements**

The cited references also fail to teach or suggest all the elements of claim 17. Claim 17 calls for, in part, a plasma torch having means for providing restricted adjustment of a position of a work tip portion relative to a handle portion when the work tip portion is connected to the handle portion wherein the restricted adjustment limits rotation of the work tip portion relative to the handle portion along two axes. As stated above, Appellant does not necessarily disagree that New et al. and Stuart et al. teach a torch having a head portion pivotably connected to a handle portion; however, there is no teaching or suggestion in either reference of a means for providing restricted adjustment of a position of a work tip portion relative to a handle portion to limit rotation of the work tip portion relative to the handle portion along two axes.

New et al. discloses that the swivel member 74 therein is rotatable 360 degrees in the socket 38 about the central axis A4 (Fig. 2) of the housing 30, and is also swivelable 30 degrees in the socket to position the head 70 of the torch 10 in a selected angular position relative to the handle 50. *New et al.*, col. 3, lns. 29-34 and Fig. 5. New et al. further discloses that the swivel angle (i.e., the angle A in Fig. 4 between the conical surface 40 of the swivel housing 38 and the central axis A4 (Fig. 2) of the housing) is preferably about 30 degrees, but may vary and that

swivel member 74 may be pivoted to an even greater swivel angle (e.g., up to about 80 degrees) at one location by providing aligned notches 90, 92 in the forward ends of the swivel housing 30 and front handle section 52. *New et al.*, col. 3, lns. 29-43. That is, when loosened, the connection assembly of New et al. allows unrestricted movement of the head portion of the torch along all three axes, and movement/rotation is not limited to two axes as called for in claim 17.

Referring now to Stuart et al., the conductor tube 72 disclosed therein is allowed to rotate 360 degrees about the centerline of the handle 64 and to articulate approximately 15 degrees or more in a conical area. *Stuart et al.*, col. 9, lns. 11-22. That is, a wave washer assembly, generally identified by the numeral 102, applies pressure to a ball and socket joint 100, thus holding the conductor tube 72 in a fixed but readily adjustable position. *Stuart et al.*, col. 7, lns. 52-55. The wave washer assembly 102 applies pressure to a ball shaped protrusion 204 and a connector block 104 in the ball-and-socket type connector to allow the conductor tube 72 to rotate 360 degrees about the centerline of the handle 64 and to articulate approximately 15 degrees or more in a conical area extending from a front end 192 of the connector block 104. *Stuart et al.*, col. 9, lns. 11-22.

Thus, the connection assemblies of both New et al. and Stuart et al., when loosened, allow for unrestricted movement of the head portion of their respective torches along all three axes. This is not what is called for in claim 17, which calls for rotation of the work tip along two axes. Sorkin et al. also fails to teach or suggest that the plasma torch therein is rotatable along two axes, and in fact, teaches only rotation of the entire torch head and handle assembly. As such, Appellant believes claim 17, and the claims that depend therefrom, are patentably distinct over the art of record.

### **Claims 3-5, 13, and 15**

The Examiner rejected claims 3-5, 13, and 15 under 35 U.S.C. §103(a) as being unpatentable over Sorkin et al. in view of New et al. and Stuart et al. Appellant would initially point out that the Examiner has not once, through the entirety of the examination process, indicated where in the cited references each of the elements called for in claims 3-5, 13, and 15 is taught or suggested. A review of the cited references reveals that none of Sorkin et al., New et al., or Stuart et al. teach or suggest that which is called for in claims 3-5, 13, and 15.

### **Claim 3**

Claim 3 calls for a restricted pivotable connection between the torch head and the torch body that includes a plurality of predefined set points. Sorkin et al. in no way teaches the claimed plasma torch with a pivoting head, as the head of the torch of Sorkin must pivot with the handle

thereof. *See Sorkin et al.*, col. 7, lns. 3-17. While New et al. and Stuart et al. do teach pivotal torch assemblies, both references disclose a torch having a pivotal head assembly wherein a ball-and-socket type connection is used. When the ball and socket connection is loosened, the pivotable member is allowed to move freely and unrestricted in any direction and to any degree. *See New et al.*, col. 2, ln. 39 to Col. 3, ln. 44; see also . *Stuart et al.*, col. 6, ln 5 to col. 7, ln. 55. Neither reference teaches or suggests that the ball and socket connections therein include any predefined set points as called for in claim 3.

#### **Claims 4 and 13**

Claims 4 and 13 call for an index/ratchet mechanism disposed between the torch body and the torch head and constructed to indicate position of the torch head relative to the torch body at each predefined set point. Sorkin makes no mention of an index or a ratchet mechanism. Furthermore, as set forth above with respect to claim 10, both New et al. and Stuart et al. disclose a torch having a pivotal head assembly wherein a ball-and-socket type connection is used. When the ball and socket connection is loosened, the pivotable member is allowed to move freely and unrestricted in any direction and to any degree. There is, however, simply no index mechanism taught or suggested in Sorkin et al., New et al., or Stuart et al. that is disposed between the torch body and the torch head to indicate position of the torch head relative to the torch body at each predefined set point. In fact, as described with respect to claim 3, neither reference teaches or suggests that the ball and socket connections therein is even configured to provide any predefined set points associated with rotation of the torch head.

#### **Claim 5**

Claim 5 calls for a torch head that is pivotable about no more than two axes. As set forth above with respect to claim 17, while both New et al. and Stuart et al. may teach a torch having a head portion pivotably connected to a handle portion, there is no teaching or suggestion in either reference of the torch heads therein being pivotable about no more than two axes. Rather, the ball-and-socket type connection assemblies of both New et al. and Stuart et al., when loosened, allow for unrestricted movement of the head portion of their respective torches along all three axes. *See New et al.*, col. 3, lns. 29-34 and Fig. 5; *see also Stuart et al.*, col. 9, lns. 11-22.

#### **Claim 15**

Similarly to claim 5, claim 15 calls for the plasma torch and multi-position head are in a common plane through a range of rotation of the multi-position head. That is, rotation between the plasma torch and multi-position head is limited to two dimensional rotation. As the ball-and-socket type connection assemblies of both New et al. and Stuart et al., when loosened, allow for



unrestricted movement of the head portion of their respective torches along all three axes, they do not provide for a range of rotation in a common plane as called for in claim 15.

In light of the above, Appellant believes that each of claims 3-5, 13, and 15, in addition to being allowable pursuant to the chain of dependency, are also patentably distinct over the combination of Sorkin et al., New et al., or Stuart et al. Accordingly, the rejection of claims 3-5, 13 and 15 cannot be maintained.

**Rejection under 35 U.S.C. §103(a) over Sorkin et al. (USP 6,380,508)  
in view of Stuart et al. (USP 5,338,917)**

**Claims 1-22 and 24**

The Examiner rejected claims 1-22 and 24 under §103(a) as being unpatentable over Sorkin et al. in view of Stuart et al. As set forth above, the rejection, on its face, is contradictory to the rejection of claims 1-22 and 24 under 35 U.S.C. §103(a) as being unpatentable over Sorkin et al. in view of New et al. and Stuart et al. Since the Examiner has relied on a third reference (New et al.) as set forth above, Appellant will only briefly reply to the combination of Sorkin et al. and Stuart et al. without New et al. As it is believed this rejection was left in the last Office Action in error, Appellant reserves the right to further respond in its Reply Brief once the Examiner has clarified his position in the Examiner's Answer.

As argued in detail above, Appellant believes that the combination of Sorkin et al., New et al., and Stuart et al. fails to teach or suggest that which is called for in claims 1, 10 and 17. As the combination of Sorkin et al., New et al., and Stuart et al. fails to teach or suggest that which is called for in claims 1, 10 and 17, it follows that the combination of only two of those three references, Sorkin et al. and Stuart et al., would also fail to teach or suggest that which is called for in claims 1, 10 and 17. The failure of Sorkin et al. and Stuart et al. to teach or suggest all the elements called for in claims 1, 10 and 17 (and in dependent claims 3-5, 13, and 15) has been set forth in detail above, and thus it is believed that no further arguments are necessary here.

Similarly, Appellant has argued above that one skilled in the art would not be motivated to combine the teachings of Sorkin et al., New et al., and Stuart et al., and that the combination thereof would not result in the present invention. In those arguments, Appellant argued the combination of Sorkin et al. and Stuart et al. and that the welding gun disclosed in Stuart et al. is for use in a MIG welding system, not a plasma cutting system as is called for in the current claims, and could not logically be combined with the plasma torch of Sorkin et al. so as to teach the current invention. The combination of either New et al. or Stuart et al. with the torch of Sorkin et al., and the further combination of New et al. with Stuart et al. would result in a torch

with either duplicative mechanisms for rotation or in a torch in which the mechanism for rotation is rendered ineffectual. The lack of motivation to combine Sorkin et al. and Stuart et al. has been set forth in detail above, and thus no further arguments and/or explanations are necessary here.

8. **CONCLUSION**

In view of the above remarks, Appellant respectfully submits that the Examiner has provided no supportable position or evidence that claims 1-22 and 24 are not patentable. The art of record does not support the combination of references asserted by the Examiner. As argued above, the combination of Sorkin et al., New et al., and Stuart et al. (1) does not provide the requisite motivation or suggestion to combine the references in the manner done by the Examiner, (2) lacks a reasonable likelihood of success for any resultant combination thereof, and (3) fails to teach or suggest each and every element as called for in the present claims. Accordingly, Appellant believes claims 1-22 and 24 are patentably distinct thereover. Accordingly, Appellant respectfully requests that the Board find claims 1-22 and 24 patentable over the prior art of record, direct withdrawal of all outstanding rejections and direct the present application be passed to issuance.

Respectfully submitted,

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Dated: December 10, 2007  
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<sup>1</sup>The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 50-2623. Should no proper payment be enclosed herewith, as by credit card authorization being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 50-2623. If any extensions of time are needed for timely acceptance of papers submitted herewith, Appellant hereby petitions for such extensions under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 50-2623. Please consider this a general authorization to charge any fee that is due in this case, if not otherwise timely paid, to Deposit Account No. 50-2623.

## **CLAIMS APPENDIX**

### **In the Claims**

1. (Previously Presented) A plasma cutting torch comprising:  
a torch body having a handle which extends from a first end to a second end, the first end being fixed with respect to the second end; and  
a torch head having a restricted pivotable connection to the torch body and configured to generate a cutting arc at a plurality of angles relative to the torch body.
2. (Original) The plasma cutting torch of claim 1 wherein the restricted pivotable connection includes an infinitely variable connection limited to two axes.
3. (Original) The plasma cutting torch of claim 1 wherein the restricted pivotable connection includes a plurality of predefined set points.
4. (Original) The plasma cutting torch of claim 3 further comprising an index mechanism disposed between the torch body and the torch head and constructed to indicate position of the torch head relative to the torch body at each predefined set point.
5. (Original) The plasma cutting torch of claim 3 wherein the torch head is pivotable about no more than two axes.
6. (Original) The plasma cutting torch of claim 1 wherein the torch head pivots from a position generally aligned with an axis of the torch body to a position generally transverse to the axis of torch body.
7. (Original) The plasma cutting torch of claim 1 wherein the torch head is pivotable from approximately 75 degrees through to 180 degrees.
8. (Original) The plasma cutting torch of claim 1 further comprising an electrode disposed within the torch head.
9. (Original) The plasma cutting torch of claim 8 further comprising a cup removably attached to the torch head and constructed to center the electrode therein.

10. (Original) A plasma cutting assembly comprising:

a power source;

a plasma torch electrically connectable to the power source; and

a multi-position head ratchetably connected to the plasma torch.

11. (Original) The plasma cutting assembly of claim 10 further comprising an electrode positioned in the multi-position head and in electrical communication with the power source when the plasma torch is connected thereto.

12. (Original) The plasma cutting assembly of claim 10 further comprising a hinge connecting the multi-position head and the plasma torch.

13. (Original) The plasma cutting assembly of claim 12 further comprising a ratchet mechanism constructed to secure the multi-position head at predetermined positions relative to the plasma torch.

14. (Original) The plasma cutting assembly of claim 13 wherein the ratchet mechanism provides restricted ratchetable rotation of the multi-position head from 90 degrees relative to the plasma torch, 135 degrees relative to the plasma torch, 170 degrees relative to the plasma torch, and 180 degrees relative to the plasma torch.

15. (Original) The plasma cutting assembly of claim 10 wherein the plasma torch and multi-position head are in a common plane through a range of rotation of the multi-position head.

16. (Original) The plasma cutting assembly of claim 10 further comprising a cap connected to an end of the multi-position head generally opposite an end of the multi-position head connected to the torch and constructed to removably secure an electrode in the multi-position head.

17. (Previously Presented) A plasma torch comprising:

a handle portion and a work tip portion; and

means for providing restricted adjustment of a position of the work tip portion relative to the handle portion when the work tip portion is connected to the handle portion wherein the restricted adjustment limits rotation of the work tip portion relative to the handle portion along two axes.

18. (Original) The plasma torch of claim 17 further comprising a locking assembly constructed to fix the means for providing restricted adjustment thereby fixing a position of the work tip portion relative to the handle portion at a plurality of predetermined positions.

19. (Original) The plasma torch of claim 17 further comprising an electrode disposed in the work tip portion of plasma torch and electrically connected to a power source through a plurality of work tip positions.

20. (Original) The plasma torch of claim 17 wherein the plasma torch is any one of a contact start plasma torch, a high frequency start plasma torch, and a high voltage start plasma torch.

21. (Original) The plasma torch of claim 17 wherein the work tip portion has a range of motion between generally aligned with an axis of the handle portion and generally transverse to the handle portion.

22. (Original) The plasma torch of claim 17 wherein the means for providing restricted adjustment is at least one of a hinge joint, a ball and socket joint, and a pin joint.

23. (Cancelled)

24. (Original) The plasma torch of claim 17 wherein the means for providing restricted adjustment includes adjustment from one predefined position to another predefined position.

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**EVIDENCE APPENDIX:**

-- None --

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**PROCEEDINGS APPENDIX:**

-- None --